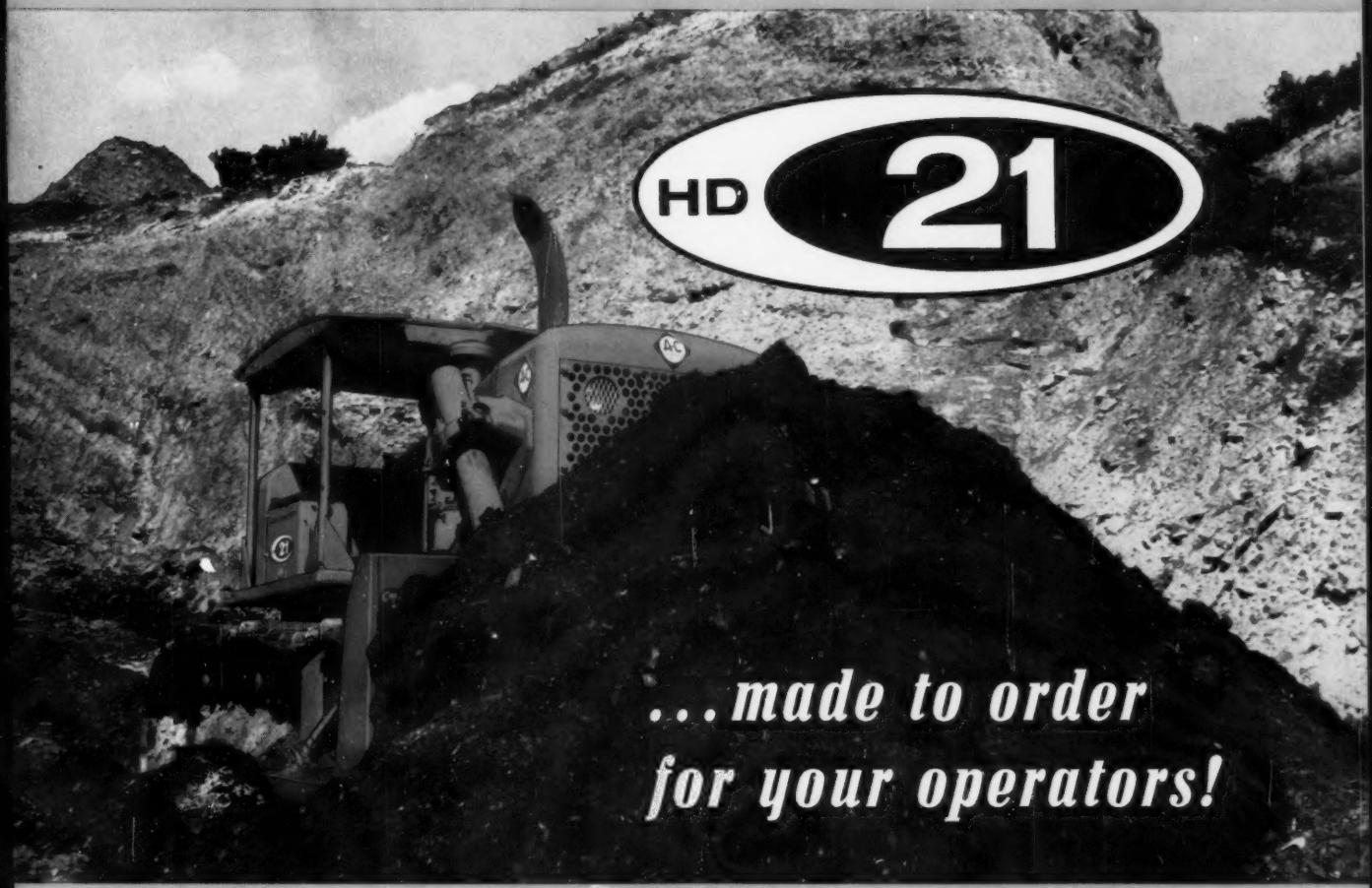
COAL MINING

October, 1961 Volume 38, No. 10



Allis-Chalmers HD-21 . . . Thompson Bros. Coal Co., Philipsburg.

The new 225 hp Allis-Chalmers HD-21 combines all of the features your operators have always wanted most in your tractors.

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Factory-trained mechanics, working with specialized tools and authorized methods, put used equipment in top condition to insure productive performance.

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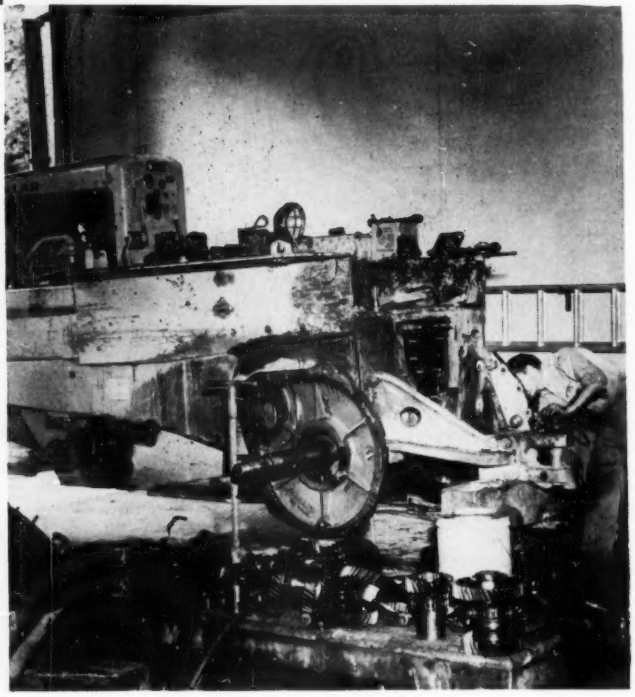
When you buy a piece of reconditioned or rebuilt earthmoving equipment, you want a machine that has been put in the best working condition for the lowest possible purchase price. At Beckwith Machinery Company - your Caterpillar dealer - you get more than that. You are benefitting from the best service and repair facilities in the East.

Our used equipment has been carefully inspected and repaired by factory-trained mechanics. Not only will you be buying a used machine in top working condition today but, through our service "know how" you get a machine which will provide many low cost producing hours in the future. Check with us for the exact machine you need in the price range to fit your budget.



Trouble areas are thoroughly investigated and badly worn components replaced.

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COAL MINING

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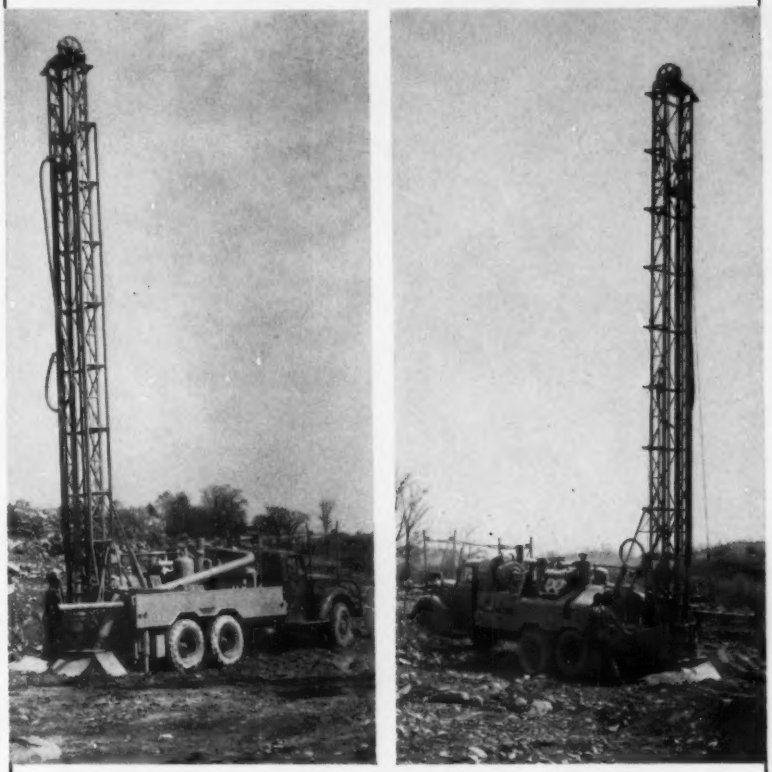
DAVEY Rotary Drills cut coal drilling costs!



Davey Model 8-MA at U.S. Coal Co., Holloway, Ohio.

For more economical, faster drilling . . . increased production at reduced costs, leading strip operators rely on Davey.

Suitable for mounting on any make of truck, Davey Rotary Drills move fast between blast holes . . . are ideal for low cost core drilling with air . . . easy to set in drilling position.

Daveys are offered in 8 different truck-mounted models—air blast, mud pump or combination types. Rated capacities to 3,500 ft. Features include choice of power take-off or separate power unit operation, automatic hydraulic feed with manual override, heavy-duty rotary table and rugged tubular box-type mast. Tractor mounted drills also available. A-222A

Write for Bulletin E-702S!

DAVEY pioneers of "air-cooled air"

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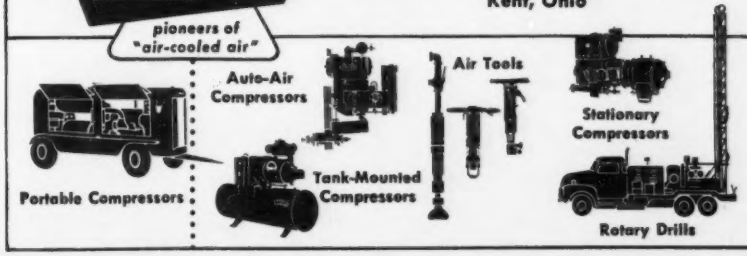
Kent, Ohio



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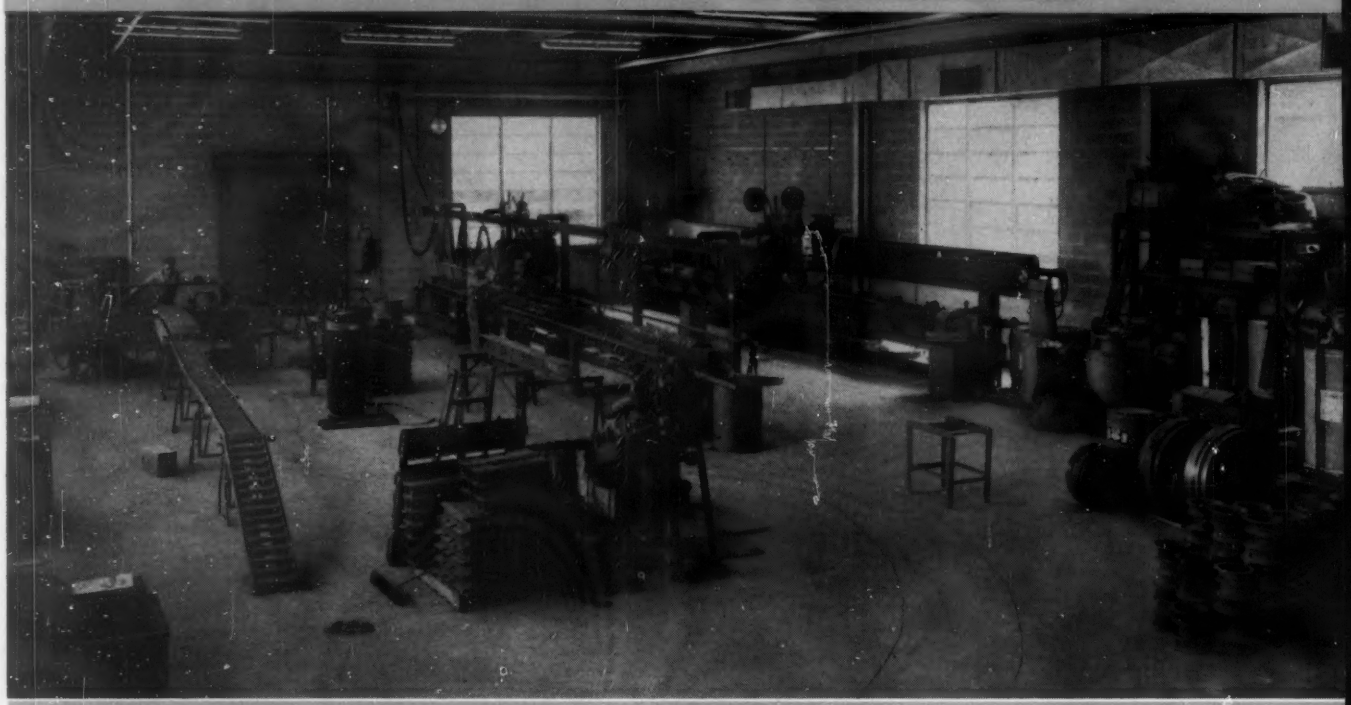
BECKWITH'S NEW Custom TRACK SERVICE CENTER.....

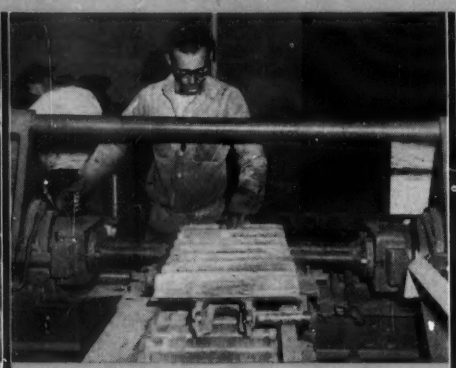


Custom TRACK SERVICE

saves you time and money with remanufactured guaranteed parts and assemblies

....the amount of profit you make depends to a large extent upon getting the most out of the money you invest in undercarriage parts.

Each Beckwith-rebuilt roller is flame-hardened and precision ground. This high speed grinder machines welded rollers to original Caterpillar specifications assuring perfect flange alignment. Each step of Custom Track Service is carefully checked by gauges, testing devices and trained inspectors.



150 ton track pin and bushing press precisely assembles and disassembles tracks... eliminates broaching of track links. Custom work assures perfectly aligned bolt holes and links that do not bind against bushings.

A special welding rod and flux combination gives a layer of metal of extreme hardness on links, yet the core remains tough, ductile and impact-resistant. Photo-electric eyes guide the twin welding heads, skipping spaces between links. Two of these automatic rail-rebuilding machines work around the clock to speed your rails back to work.

.. offers FASTER REBUILDING

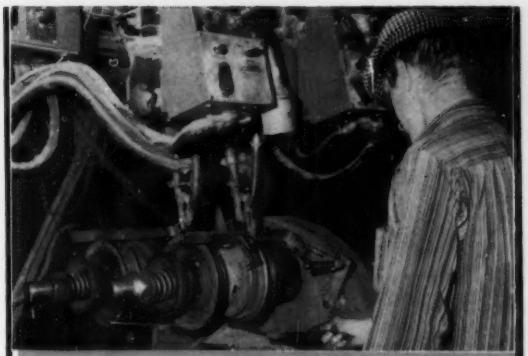
OF TRACK PARTS.....AT LOWEST COST

WITH SAME HIGH QUALITY

"Lowest operating costs per hour! That's what you get when you convert your worn Caterpillar-built track parts into renewed parts through Beckwith's new automatic welding department. Relocating our Pittsburgh plant has given us the opportunity to expand our space, add new time-saving equipment and streamline our operations to cut costs for you with our improved Custom Track Service.

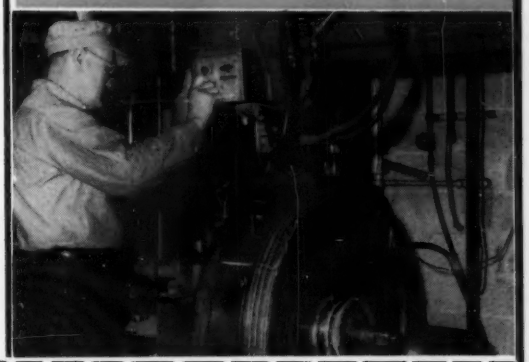
HIGHEST QUALITY.....REASONABLE PRICES

"This modern facility enables us to rebuild links, rollers and idlers at but a fraction of new parts costs. Yet Beckwith's custom renewed undercarriage components give service almost equal to new. Many of our owners have come back time after time with additional jobs because of their satisfaction with our work.



▲ A submerged arc builds up rollers in continuous weld-cool-weld cycle that produces a superior deposit and prevents porosity and cracking.

▼ No low or high spots, on Beckwith-remanufactured idlers. Special materials put a surface on rollers and idlers comparable in hardness to the original part.



FREE PICK-UP AND DELIVERY ON COMPLETE UNDERCARRIAGE JOBS

"Beckwith's specially equipped truck will come to your job site or shop to pick up complete track remanufacturing orders . . . at no additional cost. Delivery will be made promptly after quality rebuilding has been accomplished.

CUSTOM TRACK SERVICE EXPERTS AT YOUR CALL

"In addition to our parts and service managers at each Beckwith service center, we have six factory-trained field representatives waiting to help solve your undercarriage problems. They are on call to advise proper time to rebuild . . . and with no obligation to you. Stop in to see our new welding facilities and see for yourself how we can save you time and money."......Jim Simmers, Weld Shop Foreman.

WRITE FOR MORE INFORMATION TODAY.....

MR. JIM SIMMERS
BECKWITH MACHINERY COMPANY
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I would like more information on prices of remanufacturing the following items:

☐ Rollers for_____
(make, model tractor)

☐ Idlers for_____

☐ Rails for_____

Others_____

Name_____

Address_____

City_____ State_____

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Do You Know?

A learning machine designed to tackle baffling problems that cannot be solved logically has been developed by Raytheon Company.

Unlike computers, the Cybertron does not work from programmed step-by-step formulas, but attacks problems for which there is no known formulas. The machine learns by trial and error, relates new situations to past experience, and steadily improves its skill.

When the machine makes a mistake, a technician "punishes" it by pushing a "goof" button, forcing it to reconsider its decisions and modify its memory.

A small Cybertron, the K100, uses punched tapes for its learning process and its memory storage. Used in a Department of Defense project on separating true target echoes from false radar signals, it came up with the necessary information for designing an improved filter capable of extracting more reliable information from radar equipment.

A larger model, the K200, will be able to recognize and type out typical English word sounds dictated to it. It is also being designed to squeeze spoken messages into tiny pulses that can be changed back into sound at the receiving end, multiplying by ten times the number of messages that can be sent simultaneously on one radio band.

Aldous, an electronic "personality," was introduced to the American Psychological Association meeting by Dr. John C. Loehlin of the University of Nebraska.

Aldous, named by Dr. Loehlin for Aldous Huxley, the writer, author of "Brave New World" among other novels, was created as a model of human personality. Actually Aldous is really only an electronic computer or, more precisely, a set of coded instructions punched in paper tape called by scientists a "program." The tape works like the old-fashioned player piano roll and tells Aldous how to behave.

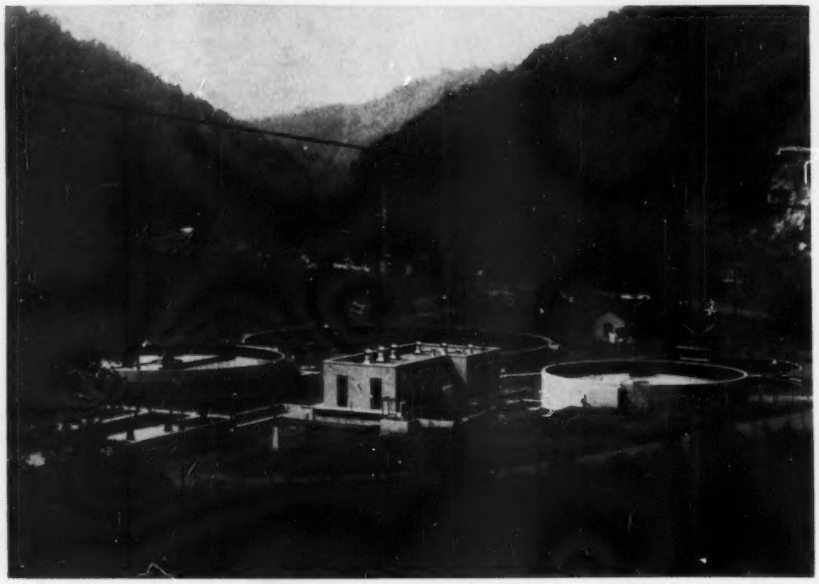
Aldous, the psychologists here learned, can profit from experience, or learn. He can forget, love, fear and be angry.

In a new situation, Aldous can recognize what he confronts. He responds with an appropriate emotion. This can be a positive emotion, such as love, desire or attraction, or it can be one of two negative emotions, anger or fear.

Aldous' emotional reaction depends on both his current mood (that is, a persistence of his emotions from the immediately preceding situation) and his memories of what happened in related situations in the past.

On the basis of his emotional reaction, Aldous acts. He may approach affectionately, attack or withdraw.

HERE AND THERE IN THE COAL INDUSTRY



U. S. Steel's Gary District's modern sanitation plant was officially opened when state, county and local officials, together with union, business and press representatives, toured the plant. The guests also visited the District's modern water purification plant.

● One of the most modern sanitation plants in the country is now in operation at U. S. Steel's Gary District, C. W. Connor, Jr., general superintendent, announced.

"This new facility," Mr. Connor pointed out, "is the first of its type to be installed in Southern West Virginia."

State, county and local officials, together with union, industry and press representatives, visited Gary to inspect the new system. The visitors will also be shown the water purification plant and several other community improvement projects that have made Gary one of the most modern coal mining areas in West Virginia.

The modern trickling, filter-type sewage disposal plant can treat up to 2,000,000 gallons of sewage daily, which is ample capacity to serve the present as well as the future Gary population.

An integral component of the disposal plant is a modern laboratory located in the primary pumping and control house for sampling the plant's discharge to assure conformance with requirements of the West Virginia State Department of Health.

"With the new sanitation system in operation," Mr. Connor said, "Gary residents are assured of a continuous up-to-date method of treating sewage and highlights the Corporation's continuing policy to cooperate in the state's clean stream program."

● Joseph P. Routh, chairman of the board and president of The Pittston Company, announced the election of C. Kyle Tieche as president of the Clinchfield Coal Company, a division of Pittston.

Mr. Tieche succeeds Robert H. Hughes who becomes chairman of the board of Clinchfield with headquarters in New York City. O. Neil Hall was elected administrative vice president.

The Pittston Company is a diversified organizations with divisions and subsidiaries in general trucking and armored car services, oil distribution and bituminous coal mining.

Left: Jack Docherty, Highway Equipment Co., Burt Thorpe, Thorpe Equipment Co., Bob Bailey, Bob Bailey Coal Co.

Left: Ira L. Hall S & D Trucking Co., H. Elmer Whitmeyer, Whitmeyer Equipment Co., Joe Stegner, Bradford Coal Co., Joseph L. Kozer, Salem Tool Co., Ira G. Hall, S & D Trucking Co.

Left: Jack Combes and Jack Kennedy, Anderson Equipment Co., Al. Lenz, Manitowoc Engineering Corp., Dick Anderson, Anderson Equipment Co.

Annual Meeting Of the Central Pennsylvania Open Pit Mining Association

The Annual Meeting of the Central Pennsylvania Open Pit Mining Association was held at the Clearfield Country Club, Clearfield, Penna., on Wednesday, September 13. The biggest single doings at this picnic was the game of golf which started early in the day and last until dark.

The attendance this year was not as large as in previous years but the industry was well represented from the standpoint of strip mine operators and equipment and supplies dealers. Refreshments were furnished by the equipment and supplies dealers and the guests were very well behaved.

Left: W. Carpenter, Manitowoc Sales & Service Corp., Stan Wanek and Arnie Rappel, Manitowoc Engineering Corp., Ronald Winslow and Wm. S. Milligan, Edmonds Construction & Supply Co.

Left: L. Donehue, Allegheny Machinery Sales; Geo. Shimchok, Simca Mining Co.; Chuck Sweeney, Link Belt Speeder Corp., R. L. Spencer, Hepburnia Coal Co.

Left: Geo. Clark, National Powder Co., Andy Gearhart, Robert Bailey Coal Co.; E. A. White, National Powder Co., Bob Cunningham and Alex Watson, Watson Equipment Co.

ABC's of SAFETY

Safety-minded management men know that safety is not as simple as ABC. Yet, they also know that the ABC fundamentals are vital for reducing the accident rate in coal mines

By H. E. Carroll

You can use these ABC's of safety to develop a renewed interest in your safety program and to stimulate your thinking for new and better methods of reducing your accident rate.

AIM for a new safety record. Set your sights higher and keep your eye on your safety goal of fewer accidents and hence a lower insurance cost.

BUY safety equipment and clothing. Dollars invested in safety attachments and protective clothing for your employees pay handsome dividends in better morale and fewer lost time accidents.

CREATE a feeling of pride in safe work. By constantly building up your employees who are safe workers, the show-offs learn that their unsafe antics are not appreciated by management or by other employees.

DEVELOP a better safety program. Any training program can be improved with new methods, approaches or ideas that will retrain your employees in safer ways of performing their work.

ENTHUSE everyone to become safety conscious. Enthusiasm is contagious. When top management is enthusiastic about safety this enthusiasm quickly spreads over the entire organization.

FIRE accident-prone employees. Better yet check past records of prospective employees and don't hire people who are accident prone. You will reduce your insurance rate and help protect your safe working employees.

GIVE safety awards with showmanship. Regardless of the extent of your safety award program, you can improve it in the way you make the presentation. Give your safety awards with a flourish.

HOLD regular safety meetings. When safety meetings are held regularly, everyone becomes safety-conscious as the meeting time nears. And, it stimulates safety meeting ideas to have to prepare something new and different for regular meetings.

INVESTIGATE all accidents. Complete and careful accident investigation improves your safety program. Causes can be eliminated, your employees feel you have a sincere interest in their welfare, and during the investigation everyone is safety conscious.

JOIN safety organizations. Meeting with other local firms to discuss safety problems helps your safety program. Ideas picked up from other firms, even though in an unrelated business, can be modified and adopted to solve your safety problems.

KEEP your safety program in high gear. Putting emphasis on safety after an accident is natural, but the emphasis is already there in the minds of your employees. Keeping interest high at other times is more difficult, but it pays dividends by keeping the accident rate low or at zero.

LAYOUT all work areas to incorporate all safety factors. This will include location of equipment, routes of material handling equipment and safety color painting ideas to highlight potential accident areas.

MAIL safety information to your employee's homes. Your employee's families can be a big help in your safety program. Mail the safety news home so it will arrive and be discussed in the family group.

NAME key employees to a safety committee. This puts more people into the safety act and through committee action more and better ideas are developed to promote safety.

OVERCOME employee inertia to safety. If you have operated a long time without a serious lost time accident, your employees may be developing careless habits. Overcome this safety inertia drastically to maintain your safety record.

PRAISE your safe workers in public. A presentation of safety safety awards before all of your employees makes the award more significant. Publicity of your safety records in local newspapers provides praise for everyone.

QUESTION every accident statistic to see if some type of pattern develops. For instance, by questioning all details you may discover that certain work areas, certain age employees, or certain times of day produce the most accidents.

REPORT all safety activities. Middle-management reports should go up to top management and down to the workers. Regular reports of safety ideas and promotions develop more safety-consciousness than occasional accident reports.

STRESS safety everywhere. Use a safety insert in pay envelopes. Display safety posters on employee bulletin boards. Mail safety news to homes. Place safety publicity in your local newspapers. Hold safety contests to keep your stress on safety.

TRAIN all employees in safety. There is a safe and a dangerous way to handle any work assignment. By stressing the safe way in your job instruction training, your employees learn the right and the safe way to perform the task.

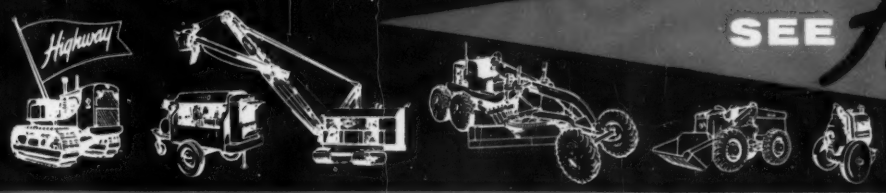
UTILIZE all safety information and posters available. One lost time accident will cost far more than all the safety booklets and posters you can buy. Use this material—don't store it until an accident happens.

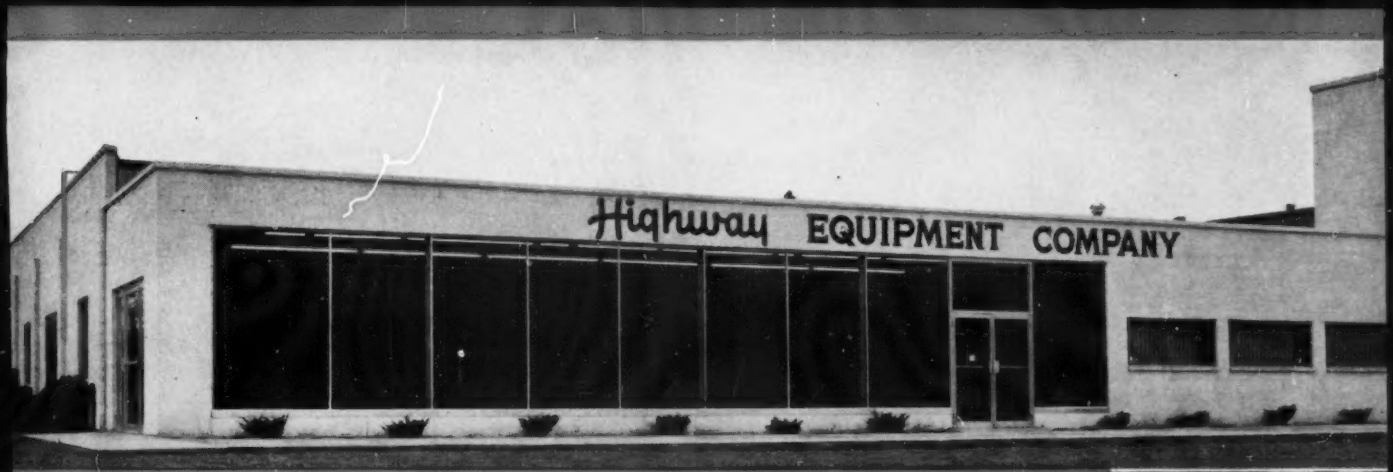
VISIT other firms. Things may look safe at home, but seeing things in new surroundings may produce a multitude of ideas to improve safe-

(Continued on Page 18)

For the best in all types of mining . . . equipment . . .

SEE Highway FIRST!





Highway in Du Bois serves "heart" of coal area

Jack Docherty
Du Bois Manager

▼ Section of Du Bois parts department

Located in the center of Pennsylvania's coal industry, Highway's Du Bois plant, like its Pittsburgh headquarters and Erie branch, is equipped to handle every need of every mine operator.

The world's finest mining machinery—Allis-Chalmers Tractors and Tractoloaders, Lima Shovels, Jaeger Pumps—is backed by 8 a.m. to 3 a.m. service by expert, factory trained mechanics. *Open 24 hours for emergency work.*

23,800 individual parts are carried in stock. Traveling service crews are available to help you quickly, efficiently, economically.

For new or used equipment, rentals, service . . . it will always pay you to *call Highway first!* A-3771A

Highway

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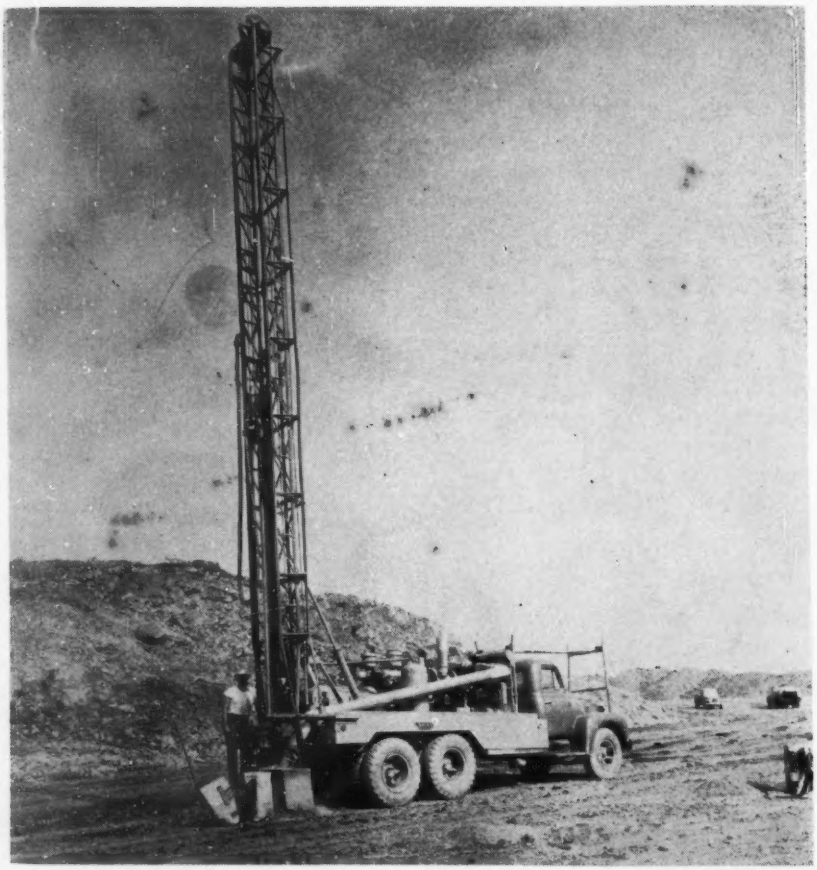
Model 726 Page Dragline stripping overburden off the lower bed in one of the lower cover areas.

Stripping Three Seams of Coal at Pottersdale, Penna.



Truck mounted Davey Blast Hole Drill making shot holes in overburden on lower bed.

Pottersdale, Pennsylvania lies in the Northeast corner of Clearfield County and on the outer fringe of the Central Pennsylvania coal deposits. The coal beds lie fairly close to the surface there and Fink & Son is stripping three beds of coal that lie under cover of from outcrop to 80 feet. The coal beds run 20", 24", and 28" thick. Cover consists of top soil on the upper bed, mostly hard yellow shale on the middle bed and hard blue shale on the lower bed. Drilling of the overburden for shooting is done with a truck mounted Davey blast hole drill with 6 inch augers, making 5⅝ inch holes.

Stripping is done with a Model 726 Page dragline having 175 foot boom and 12 yard bucket. Surface of the coal is cleaned with a Model 112 Caterpillar Road Patrol. The coal is loaded out with a Model 30 B Bucyrus-Erie shovel, equipped with a coal loading 1¼ yard dipper.

Looking back from the stripping shovel at the worked out area. All 3 seams of coal can be seen in the highwall on left. Spoil is backfilled into pits.

D-9 Caterpillar Tractor pushing spoil into pit.

Model 112 Caterpillar Road Patrol cleaning surface of stripped coal in lower bed.

Loading out coal in the lower bed.

Are YOU Ready for Tomorrow?

By Ernest W. Fair

Today's big uncertainty is not so much the threat of war and survival as uncertainty of what tomorrow will bring. In every area of one's life vast changes are taking place with each passage of the sun across the Heavens. In science, in education, in government, and yes, in business, these changes carry the probability that those who fail to prepare themselves may well be left so far behind as to become lost.

Business itself faces this challenge as evidenced by the great amount of study and research being devoted to the problem today. The coal company executive who ignores the probabilities these forecasts predict is not only setting up unnecessary roadblocks to future business attainment but endangering the very position he holds today.

In paragraphs to follow are presented a number of "probabilities" brought out in nearly a score of such forecasts the writer has analyzed during the past month. Anything of this nature cannot, of course, be presented with positive assurance that they will become actuality. They are, however, based on such thorough and complete study of business trends and probabilities that they cannot be ignored by any reader of these pages.

Are you ready for tomorrow? Check these probabilities and make certain that should any develop, as they most probably will, such beforehand awareness will guarantee the business goals being sought.

Regimentation and greater dependence on systems is an almost certainty for every executive. It already exists today in very large corporations in much greater extent than even five years past. In the very near future it will become a positive necessity down to the smallest executive position.

The development of new business machines and systems create cost saving factors which even the smallest firm cannot ignore because they rapidly become a vital competitive element.

More thorough study of motivation in every business area is becoming apparent as a must requirement for any business man in the future. This began years ago with studies of what makes people buy in retail stores then branched out to a thorough scientific approach to the problem on the part of advertising executives.

Today motivation is very much a basic part in the planning of any advertising compaign. The positive results have made clear how valuable it can be in formulating policy and procedure for every kind and type of business step in the future.

Long range planning can very well replace short term decision making in just about every area of the executive's daily procedures. Heretofore it has been applied to major policy decisions only; tomorrow it may enter into even the purchase of a box of paper clips.

Many factors have arisen (and more are to come) which will require virtual elimination of the short range decision in just about every area of business. Unceasing rises in tax costs and no apparent end to the wage spiral in business are the chief ones.

More government attention to competitive areas in business is certain to be one of the major executive problems concerned with future planning by every every executive. Every trend of the past five years highlights this change in philosophy . . . all point to its continuance into the immediate future. Wherever competition exists business can well give thought to the existence there of prying government investigators looking for something upon which to pounce.

Electronics and automation can well enter into the planning of every single business executive for the very immediate future. It can very well affect everything the executive in the smallest coal company does tomorrow. Business uses of electronics are coming so thick and fast it is almost impossible to keep up with them. The record keeping ability of elecronic tape machines, for example, offer cost saving and profit making possibilities for the smallest firm.

Levels of leisure will rise and this will affect not only consumer purchasing but the internal operation of every company. Fewer hours of effort by each employe therein will either require more return during those hours or additional personnel and the necessary programming and planning to handle such a change.

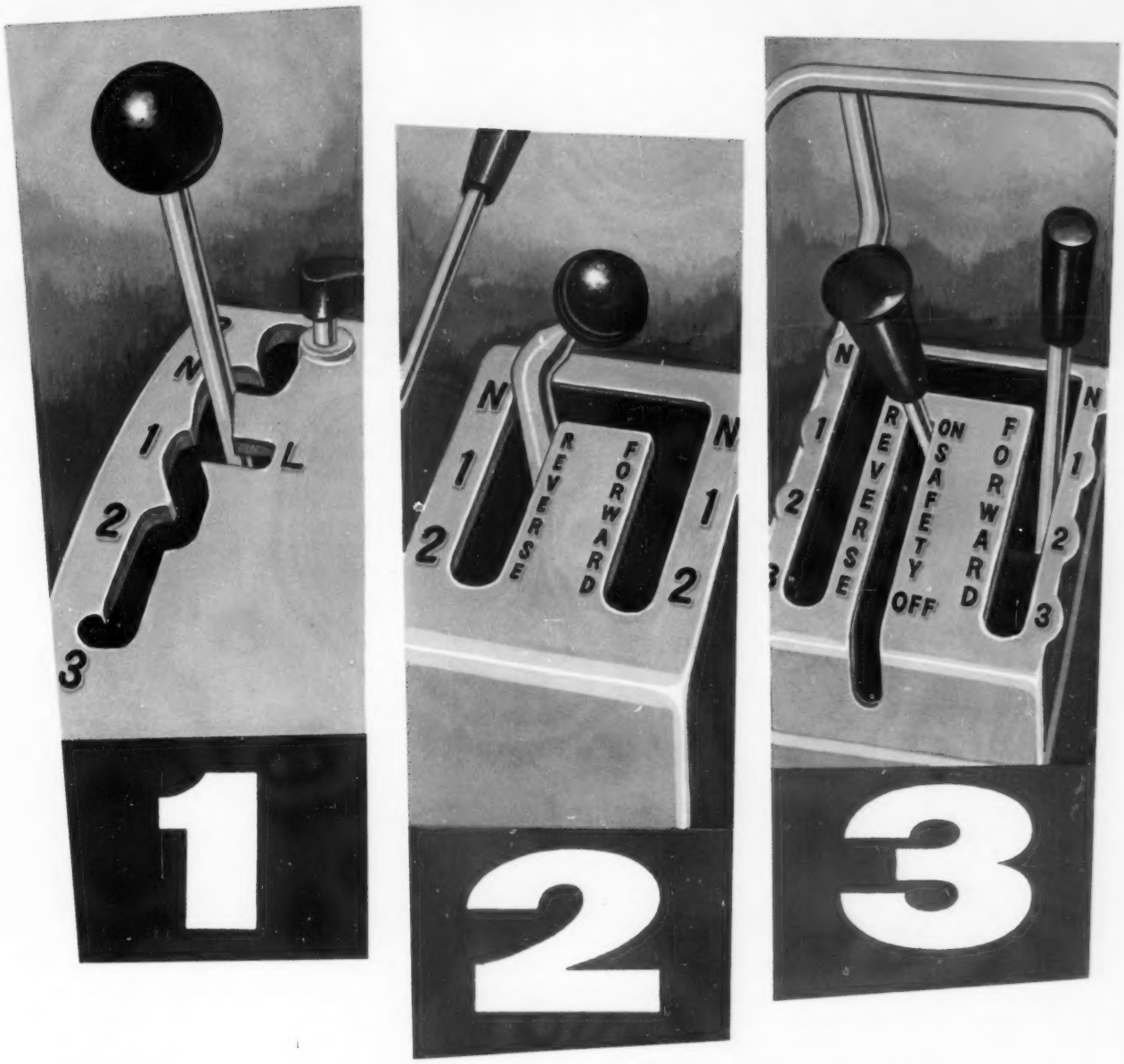
The tax factor is a positive certainty as entering into the smallest business decision which will be made in the future. Today 35 per cent of gross income goes to taxes; every sign points to a definite increase almost every year ahead. No thought is given by any responsible government official from city to national level on tax reduction other than for publicity purposes.

Insofar as the coal company executive is concerned this will affect his business decision making at every step. It will mean the tax cost factor will have to be kept in mind on every business decision confronting him.

Competition for "top dog" among the nations of the world is another certainty. In years past the spot has been ours without too much of a struggle; tomorrow we will be faced with the greatest struggle our nation has ever known as the USSR comes to the position in planning where the challenge will be thrown full in the face of business itself; not just in missiles or propaganda. Whether or not a business firm sells abroad that challenge will be felt all the way down to the corner grocer.

Increased financial reserves will become a necessity for every business in the future just ahead. These will without a doubt be difficult and uncertain times. The firms which come through these are always those in best financial position. Accumulation of more financial re-

(Continued on Page 15)



PATTERNS FOR PROFIT

These are the shift patterns for three basic Power Shift transmissions built by Caterpillar. Each is different—designed to get the most production from the machine it is used in by matching its operating requirements.

Number one, for Cat wheel rigs, provides nine speeds with just three shifts. It features the exclusive torque divider which sends 25% of engine torque to the range transmission through a converter while 75% bypasses it. *Automatic* shifting from torque divider to direct drive to overdrive in each speed range provides three types of drive for each range—thus nine speeds with just three shifts. Front-end Loaders—both wheel and track-type—work on fast, short cycles. That's why the Caterpillar full torque converter power shift transmission is best for this application. It assures torque to crowd the pile, yet full RPM's to insure constant hydraulic power. But crawler tractor work can use the advantages of both torque converter and direct drive coupled with a power shift. On the D8 and D9 Power Shift they are combined in the exclusive torque divider that sends 40% of engine torque directly to the range transmission where it is combined with 60% of engine torque that has been multiplied by a converter.

Each Cat Power Shift is a specialist, offers the most productive and economical control for each type of machine. The next pages show you how.

CAT POWER SHIFTS . .

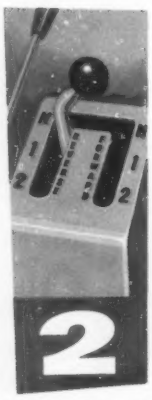
THE SPEED PATTERN

PUSHER-MATCHED POWER IN THE CUT

As it starts to load, the Power Shift wheel rig is locked in the torque divider drive (25% torque converter, 75% direct drive). This holds the advantages of torque multiplication and adjustment to pusher speed. Once loaded, it's ready for automatic drive changes, so control lever is moved into first speed range.

STEPS UP QUICKLY TO HAUL SPEEDS

As it moves onto the haul road, the Power Shift machine *automatically* shifts from torque divider to direct drive then automatically into economical overdrive. Shift dial (above) signals operator when he is ready for next speed range. Meanwhile, throttle is floorboarded all the time to make full use of the transmission.



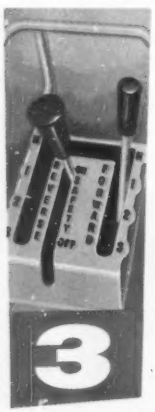
THE QUICK PATTERN

LOAD WITH FULL POWER TO TRACKS AND HYDRAULICS

A Caterpillar loader crowds into a bank for a heaped load and still has plenty of hydraulic power available for pry-out action. Power to the track is fed smoothly through a torque converter in this Power Shift; engine speed stays high although tracks may slow.

SPLIT-SECOND SHIFT INTO REVERSE

Flick one lever, and the Power Shift-equipped Cat Loader sprints back from the bank. One lever is all it takes with Cat Power Shift for speed or direction changes. Automatic kickout device correctly positions bucket for dumping while operator lines up on trucks.



THE POWER PATTERN

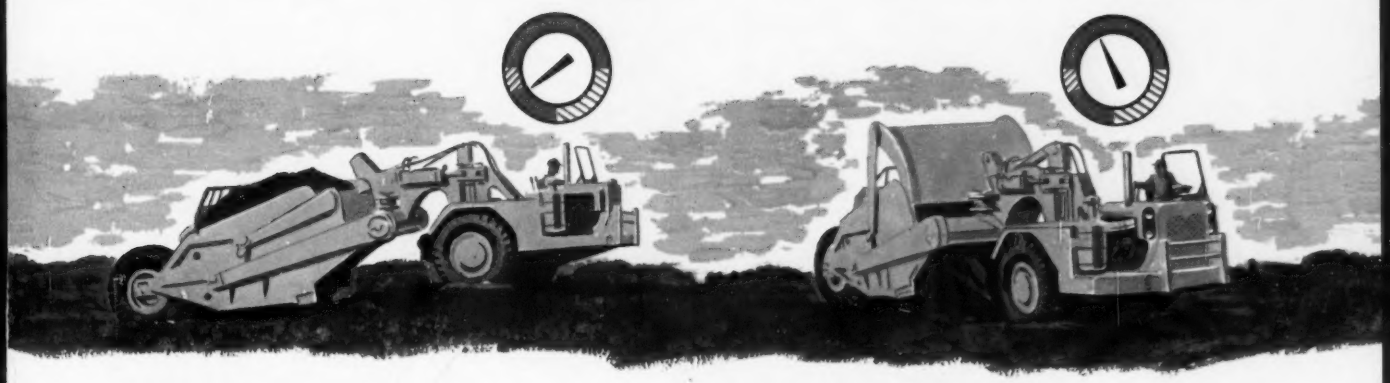
GET A FAST BLADE LOAD IN "LOW" RANGE

In a standard dozing cycle, you can slice off a blade full of dirt quickly with the Power Shift in lowest range. Advantages of the torque converter in the system show up in adjusting power to changing loads.

SHIFT TO HIGHER RANGE UNDER LOAD

Even with a full blade of dirt in front of the machine, the operator can instantly shift up into a higher range to drift the material. Direct drive characteristics provide operating snap and economy.

. . three *different* application-matched types



TAKES GRADE CHANGES IN STRIDE

A haul road hump or a gradual adverse grade that can creep up on an operator is handled automatically by Cat Power Shift. A speed sensing device shifts transmission into proper drive, while tachometer shift dial tells when lower speed ranges are needed.

SMOOTH, CLEAN DUMP IN THE FILL

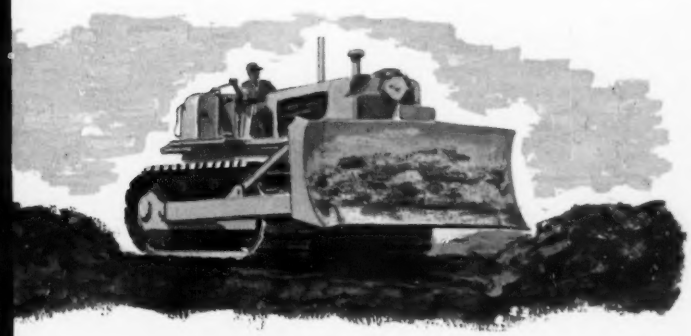
One spot where wheel rigs often add seconds on their cycle times is in the fill area. But with Power Shift, operators of a Cat 630, 631 or 619 can concentrate on making a clean, even lift. The transmission automatically shifts down to handle soft spots while operator gives full attention to scraper controls.

PRECISION CONTROL FOR DUMPING

Swing the lever around the "U" shifting pattern and the loader changes direction without braking. Modulating valves feed pressure to planetary clutches at just the right speed, insure a smooth shift without neck-snapping jerk. Operator has complete control at all times.

FOUR DIRECTION CHANGES IN 30 SECONDS OR LESS

That's about average cycle time for this Power Shifted Cat Loader. And four direction changes—at the bank and truck and twice during travel—are typical of a standard loading cycle. Most direction and speed changes can be made without even braking.



INSTANT HIGH REVERSE

With Caterpillar Power Shift you can change from any forward speed range into reverse instantly. No clutching, braking or stopping the tractor. These same features clip cycle times on pushing and ripping applications, too.

WHY THREE POWER SHIFT TRANSMISSIONS?

It takes three. Each Caterpillar Power Shift Transmission is designed to handle a specific job. No single, general purpose transmission could furnish the unique advantages that each of these specialized Power Shifts can deliver. Power Shift is standard on Cat 630, 631, optional on 619; standard on all 3 wheel loaders, the 977 and 955 track-type loaders; standard on the D9G and optional on the D8H. Ask your Caterpillar Dealer to demonstrate the advantages of the right power shift for your job.

CATERPILLAR

CAT POWER SHIFTS CAN TAKE IT!

After 6100 hours of tough dozing, ripping—a factory check showed this...

No gears or clutch plates were worn more than .006 inch—measurement showed them still to be well within original manufacturing tolerances. Only the pinion gear needed replacing, due to spalling.

This was one of the earliest Cat Power Shift transmissions that went to Ohio River Collieries in a Series E D9. The machine was put to work benching ahead of a dragline. This involved ripping and dozing a tough overburden of sandstone and shale.

The machine was brought into Ohio River's shop for undercarriage rebuilding at 6100 hours, and as part of Caterpillar's continuing program of power shift research and evaluation of field performance, the transmission was exchanged and shipped back to the factory for a complete inspection with the results described above.

Let us show you how Cat Power Shift can pay off on your job.

CATERPILLAR

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CM-13

FORM NO. DW-10614-C

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serve by every company will require added conservation and planning in every department of each company.

Scarcity of white-collar employees may very well become a major problem very soon. More and more of the men and women formerly stepping into this group are going to college or entering into the professions and personal business ventures. The drain exists on the other side of the group in increasing financial appeal of the trade groups. The net result can be a most serious shortage in business of worthwhile middle white-collar bracket workers.

More in shorter hours is a definite trend in every business area; coal companies are not excluded. The plans whereby this is to be accomplished must come from the management level and they will not be easy to arrive at. This is probably the most positive of all trends of tomorrow.

Short range planning in material use is a highly probable development of the immediate future and of top importance in every executive's work. The only deterrent may be all out war. Otherwise the next ten years are certain to see new materials for use in business coming thick and fast.

Product durability must also be given much planning thought. How long will the company's product stand up against new competition not only from existing sources but others we cannot even calculate upon today? This responsibility of top level management enters into all business planning in the future.

Expanding business competition of smaller firms into larger areas is another most likely development of the very immediate future. There has been an increasing trend during the past three years which finds companies doing business only in local areas branching out over more and more territories. This is happening everywhere. Only major economic disaster in our country will prevent it from becoming more widespread in the future.

Greater consumer demand for "extras" in their lives has been a growing trend of the past two years. It shows no sign of abating. This demand reflects itself upon every product offered the consumer in the country today. That in turn affects those products of industry which go to companies producing consumer goods as well. These continued demands for "extras" will affect just about every executive decision in each business organization for a long time into the future.

Possible shortages of investment risk capital due to the increasing drain on personal funds of taxes at every governmental level may have a serious effect on business in the very near future. When sources of new risk capital dry up business must retrench. Today living costs are continuing to rise and chiefly among those classes and groups which provided such risk capital in the past. What little is left out of income is being grabbed by the tax collectors everywhere to the point where almost nothing is left. The net result is that funds formerly avalable to average Americans for savings and investments must go to the tax collector. That in turn will, in a very short time, affect every business in the land through the tightening of credit. It must enter into tomorrow's business planning at every level.

International competition with greater freedom of imports may affect many business firms today untouched as the USA fights the USSR for trade agreements all over the face of the world. This competition will affect every phase of business in every area of the country in a very short time.

More business restraints at city and state government levels chiefly through taxing perogatives are a virtual certainty. They should be planned for in any and all types of business and their local effect on the firm of even the smallest size is certain to be felt. Nowhere is there thought given by local governmental bodies to actual application of tax reduction today; only tax increases and new sources of taxes. With each such application comes rules and regulations affecting the conduct of business under such taxes.

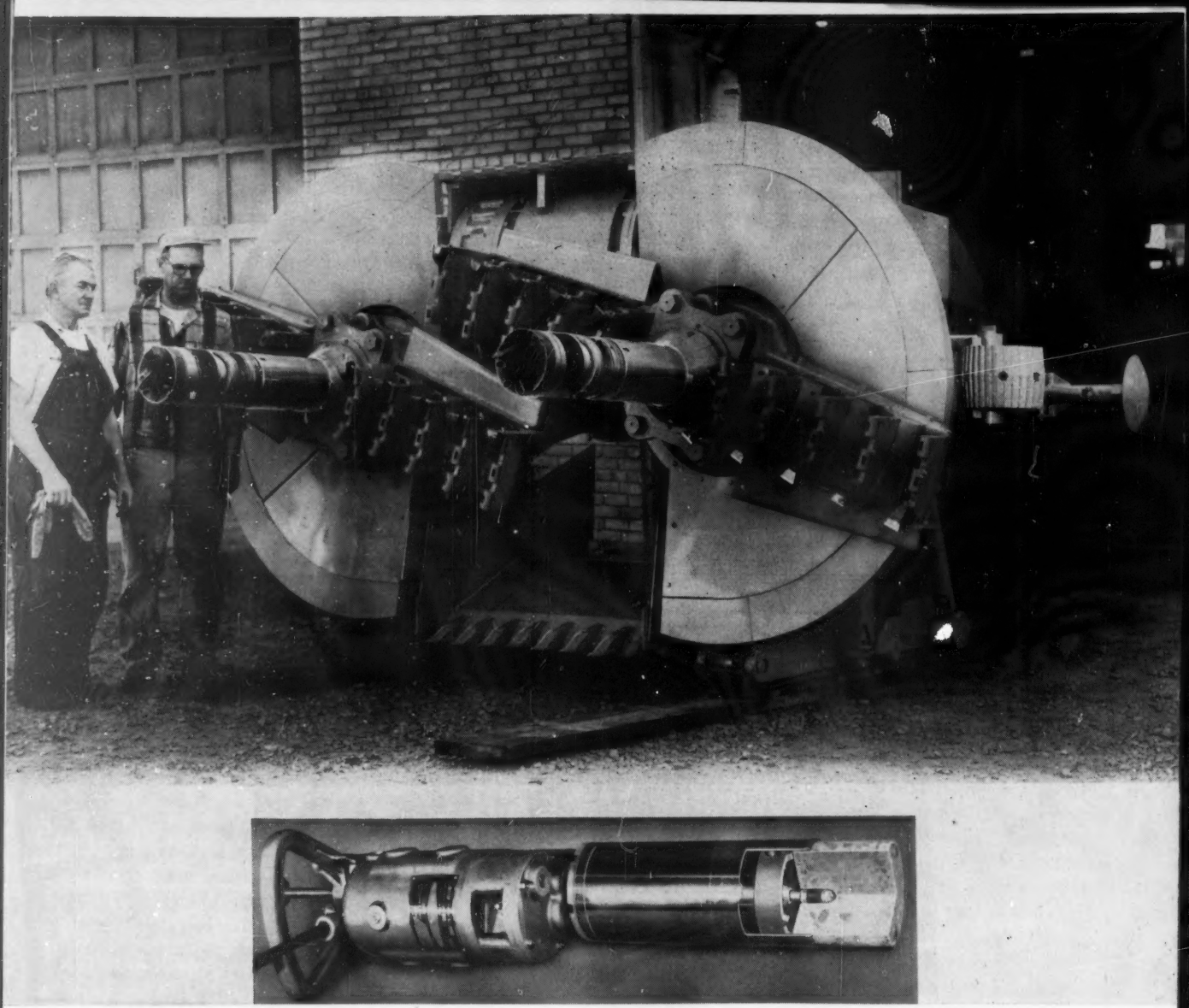
Increasing need for more facts and data all of the time is definitely apparent for the immediate future. As more and more uncertainties pile up on each business step the executive takes he will require less "guesswork" and greater assurance of where he stands on every business decision made. Facts and figures are certain to be required in business procedure steps taken today without dependence upon them.

Extension of executive responsibilities to secondary echelons in every business firm in order to permit quicker basic decisions bids fair to be on the "must agenda" of the future. This will, of a certainty, affect business steps where this has not been a requirement in the past.

New definitions of "profit" necessitated by increasing taxation on such profits may cause complete realignment of business planning at every level. As the drive for more tax money increases and new sources for these dollars become harder to find there is sure to be concerted effort toward extracting more tax dollars from existing sources. Squeezes on allowable business costs in tax figures may require greater control over existing profit accounting.

Demand at all levels for keener business judgment will very definitely affect the executive, as well as every man on his staff, who depends on accomulated wisdom alone. That in turn means more and more hours of the day devoted to study of business trends and developments and participation in increasing activities designed to provide the data and information needed to exercise such judgment in the immediate future.

Smaller profit margins may require virtual elimination of executive mistakes and blunders and the men who make them. In yesterday's business operation margin was always allowed for this human element in the executive area. Today it is a burden being looked upon with condiserable doubt in most business organizations. Tomorrow it is certain to be labeled an undesirable liability which cannot be tolerated.



Lightweight coal mining machine and a concrete drill, manufactured by the Lawrence Machine and Manufacturing Company, Seattle, Washington, pull themselves into the materials being bored by their own bootstraps. Using a new, patented boring technique, called the Alkirk Pilot-Pull Principle, these machines anchor themselves with pilots extended into the material, then pull themselves forward by means of hydraulically controlled feed pressures. The coal miner has twin pilots and counter-rotating drag-bit cutters; the concrete drill bores with core-type diamond bits up to 14 inches in diameter. The Alkirk Corporation of Seattle is licensing other manufacturers to use the Pilot-Pull Principle in machines for boring, vertical drilling, mining and other purposes.

Cut away view of concrete drill (bottom photo) shows pilot anchored in concrete core section.

Pilot-Pull Boring Type Continuous Mining Machine

A unique, new boring technique, called the Alkirk Pilot-Pull Principle, developed and patented by the Alkirk Corporation of Seattle, Washington, may have a significant influence on the future design of machines for drilling, tunneling and excavating. This revolutionary boring technique has been characterized as "a method of propulsion within a solid."

Machines operating on the pilot-pull principle literally pull themselves forward into the material to be bored by means of force exerted against a pilot which is anchored in the material ahead of the machine. The machine pulls itself in by its own bootstraps. In general, all previous boring machines achieved their thrust by pushing or bracing from behind, or the machine had to be heavy enough to provide its own thrust reaction. For this reason, there has been only a limited development of large diameter boring machines.

Two recent applications of the pilot-pull principle to new machines indicate the advantages of the pilot-pull technique applied to making holes where the desired end-product is the material removed, or where the desired end-product is the hole itself. The first is a coal mining machine called the "Alkirk Cycle

Miner." which has demonstrated its ability — in over 300 hours of operation at the Suntrana mine near Healy, Alaska — to deliver coal to a conveyor at the rate of 15 tons per minute as it cuts twin 7-foot bores into horizontal or pitched coal seams.

The other new product is a core-type concrete drill, using the pilot-pull principle, which anchors itself in a small pilot hole, then bores a hole up to 14 inches in diameter without external braces, staging or jacks. The Lawrence Machine & Manufacturing Company, 7911 10th South, Seattle, Washington, has been licensed by the Alkirk Corp. to manufacture and distribute this concrete drill.

The Alkirk Corporation was formed by two Anchorage, Alaska, businessmen, M. B. Kirkpatrick and A. C. Swalling, who own the patents on this new boring technique. Two prototypes of the coal mining machine were built and tested at the Suntrana mine, Alaska, in the 1950s. The third and perfected model of the Alkirk Cycle Miner was built in 1959 on contract at the Lawrence plant at Seattle.

Machines incorporating the patented pilot-pull principle can be designed to accomplish almost any hole-making function. The advantages of boring machines which pull themselves into the material by means of hydraulically controlled feed pressures can be summarized as follows:

1. A faster method of boring large diameter holes in hard substances.
2. Machine is lightweight, compact, maneuverable.
3. No external bracing or support is required — machine anchors to material.
4. Boring possible at any angle, including verticle.
5. Boreholes are true and smooth surfaced as vibration of machine is eliminated.
6. Machine is self-propelled, pulling itself forward on its anchored pilot.
7. Virtually continuous boring is possible by means of a self-advancing pilot.
8. Feed of cutting tools controlled precisely with unlimited pressures.

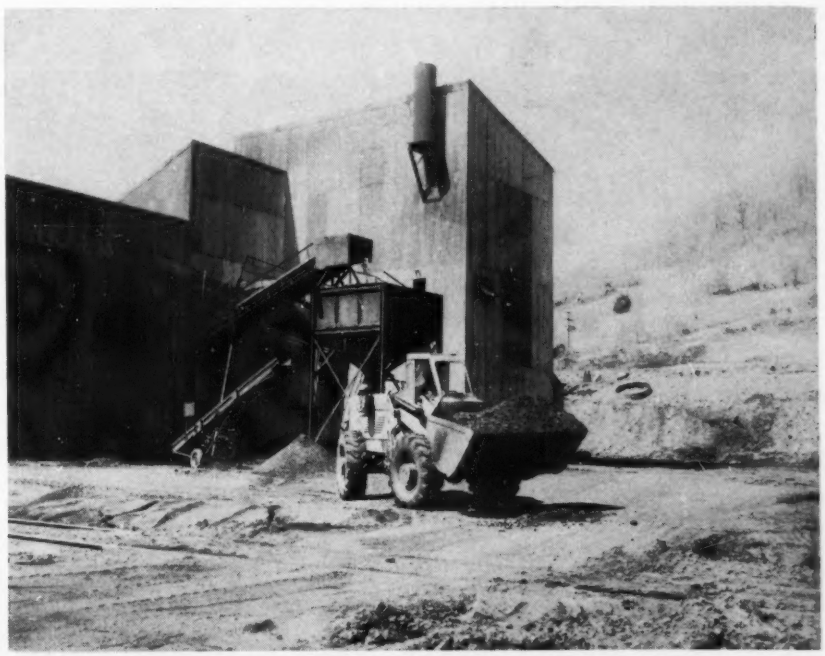
The pilot-pull concrete drill eliminates all external supports and operates in any position by anchoring itself to a pilot hole approximately 1 inch deep and 3/4 inch in diameter. The drill is centered on this hole and anchored by a collar expanded in the pilot hole. A diamond bit, up to 14 inches in diameter, is then rotated electrically and pulled into the concrete by hydraulic force exerted against the anchored pilot. The pilot-pull concrete drill can operate readily in corners, and on ceilings and walls in places that are difficult and sometimes impossible to drill with equipment requiring external support.

The application of the Alkirk Pilot-Pull Principle to such diverse machines as a concrete drill and coal miner suggests its broad range of potential applications. There is, for example, an increasing need for horizontal and vertical tunneling machines, capable of near continuous boring through hardrock and other difficult formations. Tunnel drivers have been successful in soft formations, but all machines thus far developed for tunneling in hardrock have been generally underpowered and lacking in thrust capacity.

Preliminary studies have been made by the Alkirk Corporation on the design of a hardrock tunneler and vertical big hole drill. These studies indicate that a successful machine could be built on the Alkirk Pilot-Pull Principle employing rolling cutting tools, such as used by the oil well drilling industry. An extensive test program to determine torque forces required for hardrock boring is now being conducted in cooperation with the Smith Tool Co., of Los Angeles.

Other applications of the Alkirk Pilot-Pull Principle regarded as feasible today include machines for boring exploratory holes for oil and other minerals in all directions in the earth, other types of mining machines, vertical big hole drills, and deep hole drills in which power is supplied by a drill stem. Interesting applications are also possible in the machine tool industry.

"We feel that companies engaged in developing or manufacturing machines for all purposes," states Kirkpatrick, "may be interested in utilizing the pilot-pull principle in machines of their own. We will welcome discussion of equitable licensing arrangements with qualified firms."



TractoLoader TL-20 . . . . Benjamin Coal Co., La Jose.

Greater Range Now Makes Hand-Held 2-Way Radio Practical for Strip Mining

Not as tiny as the fictional two-way wrist radio of Dick Tracy comic strip fame, the "Personal Messenger" transceiver does, however, bring nearer the day when every man might carry his own two-way radio as conveniently as he carries a watch.

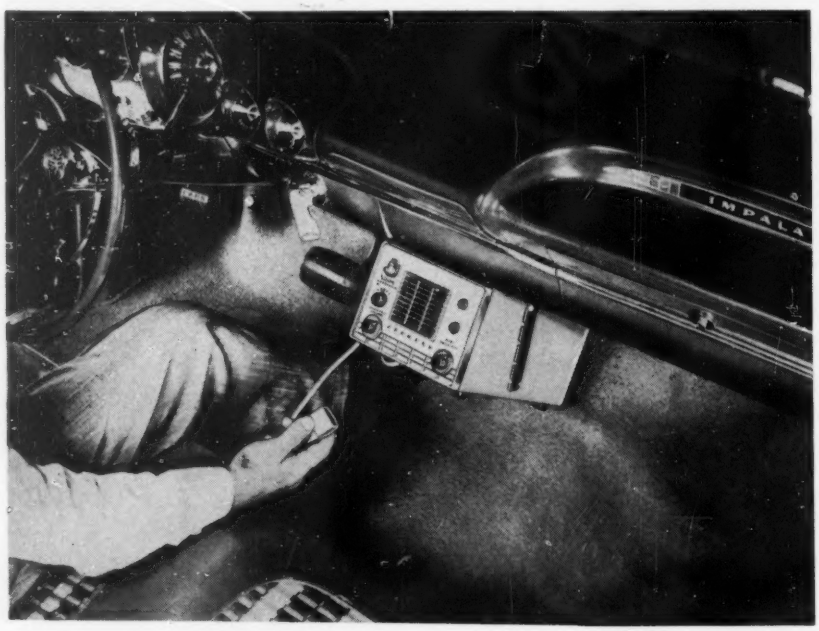
Manufactured by the E. F. Johnson Company of Waseca, Minnesota, the "Personal Messenger" is ideal for strip mining. The "Personal Messenger" has been designed for easy portability and wide flexibility. Housed in a rugged, high-impact case, with an elastic carrying strap, the "Personal Messenger" may be easily carried in the hand or coat pocket, or is available with a leather carrying case and shoulder strap so that it may be carried like a camera.

Priced at $109.50, the "Personal Messenger" requires no license for operation and may be used at once without an examination or filing out an application. The unit has also been designed for use with licensed Citizens' Band equipment at extended ranges and meets all necessary FCC requirements for this type of operation.

The "Personal Messenger" is completely battery powered and is equipped with a plug-in battery case for either standard pen light cells or the longer-lived mercury cells. Available as accessories, a rechargeable nickel-cadium battery pack or a cigarette lighter adapter may also be used to power the unit. The rechargeable battery furnishes the necessary power for unit, and when discharged may be plugged directly into any standard 115 volt wall outlet to recharge the batteries or with an adapter may be recharged from a 230 volt 50/60 cycle AC power source. The cigarette lighter adapter plugs into the lighter receptacle on any 12 volt automobile to power the unit directly from your automobile ignition system.

The "Personal Messenger" contains eleven transistors and four diodes . . . and according to the manufacturer . . . has twice the sensitivity and offers more than a 40% increase in range over similar type hand-held units with conventional circuitry.

Accessories include an earphone with plug-in cord for "private" listening or operation in noisy areas; leather carrying case; and an external antenna adapter which clips on the "Personal Messenger" to "match" the unit to external antennas for extended range in licensed Citizens' Band Stations.



ABC's of SAFETY

(Continued from Page 6)

ty. In your visits don't hesitate to ask questions and to compliment your host on his safety program—he will open up with plenty of ideas.

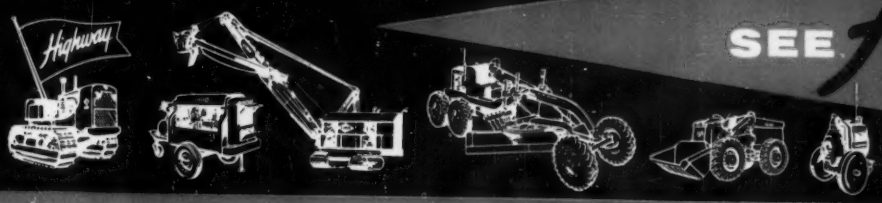
WELCOME all safety suggestions. We all have ideas that can improve safety. When these suggestions are welcomed by management, we are more inclined to submit more ideas—and from these suggestions will come ways to keep accidents at a low level.

X-MARK all accident areas. You will provide a constant reminder of safety when you use some distinctive mark for places where accidents have happened. An "X" is a simple way to identify accident areas.

YEARN for fewer accidents. Wishing may not make it so, but when you consider the accident cost in terms of dollars, lost time and physical pain it is easy to yearn for fewer accidents. Yearning will keep you alert for safer work.

ZEALOUSLY guard your safety record. Try to extend the accident free time and to reduce the number of lost time accidents. Remember: Safety is everyone's business—everyday.

For the best in all types of mining equipment...



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● The S. K. Wellman Company, Bedford, Ohio, manufacturer of all metal clutch plates, facings, brake blocks and brake linings, announces a new series of service bulletins.

Subjects of the first 3 issues are (1) riveting of metallic blocks or facings; (2) circle grinding of Velvetouch Feramic truck brake blocks; (3) copper steering brake block sets. Bulletins discuss latest product developments, proper application methods and present numerous maintenance hints. They deal with installations in motor trucks, buses, construction, mining and farm machinery, and industrial equipment.

Copies may be secured from The S. K. Wellman Company, 200 Egbert Road, Bedford, Ohio, or The S. K. Wellman Company of Canada, Ltd., 208 Bartley Drive, O'Connor Depot, Toronto 16.

● North American Coal Corporation, a leading producer of bituminous coal for almost half a century, is poised to enter a new and promising field.

By the end of the year, the Cleveland based company's new chemical processing plant, now under construction on the Ohio River, is expected to be in full-scale commercial operation.

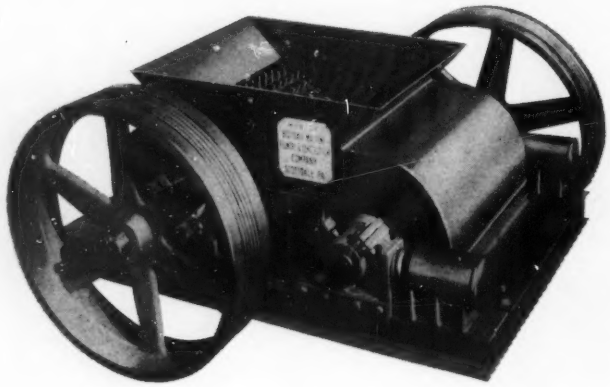
Its end product: alum or aluminum sulfate, used by the paper and pulp industry in water-proofing and by municipal and industrial water treatment facilities to aid in water purification.

First commercial shipments of the aluminum sulfate output, to be marketed in both granular and liquid form, are scheduled to be made in January, Henry G. Schmidt, President of the company, announced today.

North American broke ground for the $2 million alum-producing facility last March at Powhatan Point, Ohio, some 20 miles downstream from Wheeling, West Virginia.

It also thereby broke precedent because it marked the first time North American had branched off from coal mining operations which

SCOTTDALE DOUBLE ROLL CRUSHERS



ECONOMICAL - *takes less power*

EFFICIENT - *more uniform product*

The powerful chilled cast iron double rolls of the 63 special are covered with hundreds of steel teeth which speedily bite, chew and shred the coal to any wanted size from ¾" to 8" . . . fines are held to a low minimum.

This 2 motor drive machine has gears but is equipped with 2 easily maintained grooved flywheels. One welded steel hopper is mounted on a 46" x 65" welded steel base. Weighing only 4800 pounds and powered with 2—10 H. P. motors the crusher has a top speed of 150 RPM's with a capacity of 60 to 250 tons per hour. Comes with bronze bushed journal bearings.

Send for literature.

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A complete range of
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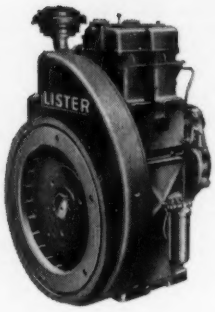
from 3½ HP to 72 HP



Model HB 2
24 HP @ 2000 RPM

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- Engineered to suit all types of applications.
- Totally enclosed working parts to insure continuous operation even under adverse conditions.
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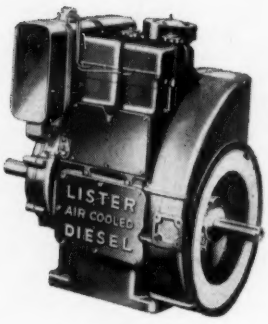
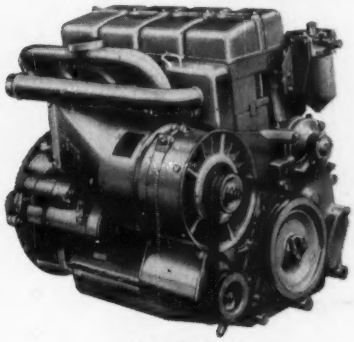
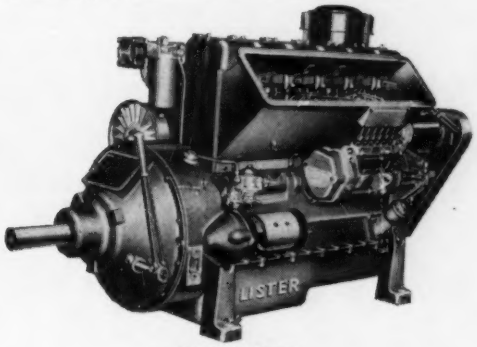


Model SL 2
10½ HP @ 2250 RPM



Model SL 4
20 HP @ 2150 RPM



Model HB 6
72 HP @ 2000 RPM

had placed the company eighth in tonnage sales last year among commercial coal producers of the United States.

"Our new alum plant will be the first step in gradually broadening program of product and market diversification being undertaken by North American," Mr. Schmidt said. "We are confident that our widening outlook heralds better business prospects ahead for our company as well as for the industry as a whole.

"North American's hopes for a brighter future are sustained by an exclusive new process which the company will use to produce the alum. The process was developed in cooperation with Strategic Materials Corporation of Niagara Falls, New York," he added.

Key to the method is use of ore which North American for years discarded as waste in its coal mining operations. The ore lies in a band above the coal seam and must be removed to get at the black fuel. In it is contained alumina, or aluminum oxide, the raw material for making aluminum metal. Some ten million tons of the now-important alumina-bearing ore is presently above ground on sites adjoining the new plant, and many more millions of tons are in the ground.

The alum, or aluminum sulfate, will be extracted from the ore by combining the ore with sulfuric acid.

One of the significant overtones is that North American's new process will make a plentiful new domestic source of alumina available to users throughout the country. Heretofore, bauxite has been the lone source of commercial alumina in this country, and 85 per cent of the bauxite consumed domestically comes from foreign deposits.

Alum from its alumina-bearing ore will be in purer form than that possible from conventional processes which start with bauxite or clays, the company added. For the paper industry, this represents a dividend in whiter paper, North American said.

The company is already designing a production plant to convert alum to alumina (aluminum oxide), which would expand market outlets for the ore derivatives to include primary aluminum metal producers. North American reports that technical feasibility of the process has been established.

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You can save yourself a lot of time when you want to dispose of mining equipment of any kind including complete mines, plants or railroads. Just call J. T. Fish — and the answer is always "YES". That's why we guarantee mine operators who buy from us an unfailing source of supply at fair prices always! Choose from our huge stock of the best in latest type mining equipment. Six mines now being dismantled in various sections of the country. Send us your inquiries. Known by the reliability of our service as well as the quality of our product. We Buy — Sell — Trade.

JOY EQUIPMENT—REBUILT

2—Joy 14BU 9AE Super Loaders—26" Hi—New 1958.
2—Joy 14BU Loaders, low pedestal, 7AE, 1956 & 57.
4—Joy 14BU Loaders, medium pedestal,7RBE.
2—Joy 14BU 7CE high pedestal loaders.
4—Joy 14BU 3PE Loaders.
2—Joy 12BU Loaders complete with Piggybacks.
2—Joy 12BU Loaders, 9E latest type 250 V. DC.
3—Joy 12BU Loaders, 220/440 Volt AC.
1—Joy 20BU Loader, latest type.
4—Joy 11BU Loaders, latest type.
1—Joy 8BU Loader, 34" overall height.
1—Joy 8BU Loader,220 V. AC.
1—Joy curved Bar Head for 14BU. complete.
6—Reliance 24-J Motors, 7½ H.P.
4—Reliance 38-J Motors, 10 H.P.
2—Reliance 40-J Motors, 15 H.P.
20—Reliance 9-J Motors, 4 H. P.
1—Goodman 660 Loader on Crawlers, excellent 250 V. DC.
1—Goodman 665 Loader on Crawlers, latest type 250 V. DC.
1—Goodman 865 Loader, 26" hi. 250 V. DC.
4—Joy 8SC Shuttle Cars, 26" Hi, rebuilt.
5—8SC Shuttle Cars, as removed from service, 26" Hi.
4—Joy 6SC Shuttle Cars, rebuilt, latest type
6—Joy 6SC Shuttle Cars, as removed from service.
1—Joy 5SC Shuttle Car, Excellent.
2—Joy 32E9 Shuttle Cars.
2—Joy 32E10 Shuttle Cars, rebuilt.
6—Joy 32E15 Shuttle Cars, rebuilt.
4—Joy 32E16 Shuttle Cars, rebuilt.
10—Joy 42E16 Shuttle Cars, rebuilt and as is.
1—Joy CD-22 Drill, on rubber, like new.
6—Joy T-2-5 low pan Crawler Trucks, rebuilt.
1—Joy T-2-6 low pan Crawler Truck with reel.
2—Joy T-1, Standard Crawler Trucks, 220 AC.
1—Joy T-1 Standard Crawler Truck, 250 DC.
4—Joy 11-B Cutting Mach., like new, 35 & 50 HP.
4—Joy 7-B Cutting Machines, like new,250 and 500 Volt.
4—Goodman 212 Cutting Machines, 19" high.
2—Goodman 312 Cutting Machines, 17" high.
2—Goodman 412 Cutting Machines, 19" high.
1—Goodman Machine on Crawler, 31" high. All hydraulic.
6—Goodman 512 Machines with Bugdusters. rebuilt and as removed from service.
6—Goodman 612 Cutting Machines, 250 & 500 volt.
1—Jeffrey 70 URB rubber tired Cutter. Universal head, perfect condition.
1—Goodman 2410 Rubber Tired Cutter, Universal head, like new.
1—Joy 11RU Rubber Tired Cutters with Bugdusters. Universal heads, dual tires, like new, 250 V. DC.
2—Joy 10RU Rubber Tired Cutters, Universal head, 250 V. DC. Rebuilt or as is.
1—Sullivan 7AU on Dual Rubber Tires 250 V. DC.
6—7AU's on track, Universal head.
2—Jeffrey 29UC Cutting Machines, Universal head, cuts anywhere in seam, 38" high, on Crawlers, 250 volt D.C.
4—Jeffrey 29LC on Crawlers, rebuilt or as removed from service.

LOCOMOTIVES

1—Goodman 6 ton, 93-A, 27" high, armor plate frame.
1—Jeffrey 15 ton MH-77 locomotive, armor plate frame.
7—Jeffrey, 13 ton, type MH-110, 36". 42" and 44" ga.
2—Jeffrey 10 ton, type MH-110, 42" and 44" ga.
2—Jeffrey, 10 ton, type MH-78, 42" and 44" ga.
2—Goodman 8-30 and 10-30 Locos., 26" above rail.
1—Jeffrey MH-150. 6 ton, 26" overall height, rebuilt with reel.
12—Jeffrey, 6 ton, type MH-88, 42", 44" and 48" ga.
4—Jeffrey, 8 ton, type MH-100 2½" armor plate frames.
3—Jeffrey, 4 ton, type MH-96, 42", 44" and 48" ga.
1—G.E., 4 ton, type 825 Locomotive, 22" high.
10—G.E., 6 ton, types 801, 803, 821 Locomotives. 42", 44" and 48" ga
1—G.E., 8 ton, type 822 Locomotive, 44" ga.
3—G.E., 10 ton, type 809 Locomotives, 42", 44" and 48" ga.
2—G. E. 13 ton, type 829 Locomotives, armor plate frames.
1—Goodman 91A Locomotive, 8 ton, 26" overall height.
2—Goodman, type 33, 6 ton, 44" and 48" ga.
3—Westinghouse type 902, 4 ton, 42" and 48" ga.
1—Atlas Battery Locomotive, 36" ga.
1—Atlas Trolley Locomotive, 4 ton, 24" high.
2—Westinghouse, type 904, 6 ton, 44" and 48" ga.
2—Westinghouse, type 906, 44" and 48" ga.
2—Westinghouse, type 907, 10 ton, 44" and 48" ga.
3—Westinghouse 908, 13 ton, Locomotives, 42" and 48" ga.
8—Jeffrey MH-78 Locomotive Units, cheap.
4—Jeffrey MH-88 Locomotive Units, real bargains.
6—Jeffrey MH-100 Locomotive Units, resonable.
3—Plymouth Diesel Locomotives, 8 and 10 tons, 42" and 44" ga.
Locomotive Trucks & Spare Armatures for the above.

TIPPLE EQUIPMENT

1—All Steel 5 Track Tipple, new 1957, complete with washer, silo, oil treating system, all bolted construction.
1—Complete Five Track Tipple with Washers and Air Tables.
1—Complete stoker plant, all steel.
2—Complete Tipples, 3 & 5 track, steel and wood.
3—Cleaning Plants, 1 ea. McNally, Roberts and Schaefer, Jeffrey Washers and Air-Flo Tables.
4—Complete Aerial Trams for coal or refuse.
3—Complete Rope and Button Lines.
2—Monitor Lines complete with Drums, excel.
1—Allis-Chalmers 5 x 12 Rippflo Vibrator.
1—Allis-Chalmers 4 x 12 Low-Head Vibrator.
1—Robins Gyrex Vibrator. 4 x 10.
10—Belt and Apron type Loading Booms.
6—Shaker Screens.
1—Robins Car Shakeout.
1—Gundlach Crusher, like new.
20—Crushers, various sizes—Jeffrey, Link-Belt. McLanahan & McNally.
4—Mine Scales, 10 & 20 ton.
5—Truck Scales, 25 to 40 ton, New and Used.
Feeders, Belt and Drag Conveyors, Car Retarders.

CUTTING MACHINES

2—Joy 10 RU Rubber Tired Cutters, Universal head, 250 V. DC. As is or rebuilt.
1—Joy 11RU Rubber Tired Cutter, 250 V. DC.
1—Goodman 2410 Rubber Tired Cutter. Universal head, new 1956. Excellent.
2—Jeffrey 29UC Universal Machines on Crawlers
1—Goodman on Crawlers, 31" overall height.
4—Baby Goodman 212's, rebuilt, 250 V. DC.
2—Goodman 312 Cutting Machines, 17" high.
3—Goodman 412 Cutting Machines, 19" high.
6—Goodman 512's with Bugdusters, like new.
4—Goodman 512's, rebuilt, or as removed from service.
6—Goodman 612's—250 & 500 Volt.
3—Goodman 112's, 220/440 Volt A. C.
4—Joy 7-B Cutting Machines, 250 and 500 Volt.
4—Joy 11B Cutting Machines, rebuilt, 35 & 50 H. P.
6—7AU's, on track, Universal head.
10—Goodman 12AA's and 112AA's, 220 V. D. C.
2—Goodman 324 Slabbers.
2—Goodman 724 Slabbers.
2—Goodman 824 Slabbers.
6—Jeffrey 35L's, like new, 250 V. D. C. 17" high.
2—Jeffrey 35L's, on low vein trucks.
3—Jeffrey 35BB's 220/440 A. C.
15—Jeffrey 35B's and 35BB's 250 V. D. C.
2—Jeffrey 29B's on track.
10—Jeffrey 29C's track mounted.
2—Jeffrey 29L's, on Crawlers. Excellent.
4—Sullivan CE7, 220/440 V. AC.

CONVEYORS

2—Joy 1200 ft. Belt Conveyors 30" "Limberoller," like new.
1—Each 30" and 36" Joy 1000' extensible belt, latest type, like new.
1—Goodman 97HC 30" Rope Belts, 1000' perfect, With or without rubber.
4—Jeffrey 52-B tandem drive 30" and 36" Belt Conveyors, 600' to 2000'.
1—Jeffrey 52-B tandem drive 26" Belt Conveyor.
1—Joy 30" Underground Belt Conveyor. Excell.
1—Goodman 97-C, 30" tandem drive.
1—Robins 38" tandom drive, with or without motor.
5,000'—52-B Belt Structure 30".
1,000' Conveyor Belt, 42".
1,500' Conveyor Belt, 36".
2,000' Conveyor Belt, 30".
1,000' Conveyor Belt, 26".
8—Jeffrey 61AM 12" Chain Conveyors, 300'.
2—61EW Elevating Conveyors.
2—61WH 15" Room Conveyors, 300'.
2—Joy 15" Room Conveyors, 300'.
2—Joy 20" Conveyors, 300'.
4—Joy Ladel UN-17 Shakers.
10—Goodman G-12½ and G-15 Shakers.
1,000' Goodman 18" Flat Belt Conveyors, tandem drive any length, Perfect.

CONVERTORS AND DIESEL PLANTS

1—300KW, G.E. Stationary Rectifier.
2—500KW G. E. Stationary Rectifiers.
4—1,000KW Stationary Rectifiers.
2—100KW. G. E. TCC-6's, 275 V., Rotary Converter.
1—150KW. G. E. HCC-6 275 V., Rotary Converters.
1—150KW. 6 phase. Allis-Chalmers Rotary Converters, 275 V. D. C.
2—200KW G. E. HCC-6's, Rotary Convertors, 275 V. D. C. Steel frames, Newly rewound.
3—300KW G. E. HCC-6's Rotary Converters, 275 V. D. C. Like New.
2—300 KW West., 6 phase, Rotary Converters. 275 V. D.C.
2—500KW. West. Rotary Converters, 275 V. D.C.
1—200KW West. Rotary Converter, 275 V. D.C. Newly rewound.
(All the above with 6900/13000 and/or 2300/4000 primary transformers).
1—50KW MG Set.
1—100KW MG Set. 275 V. D.C.
6—150KW MG Sets, G. E. and West., 275 V.D.C.
2—200KW MG Sets, West., rebuilt, 275V. D.C.
1—200KW MG Set. G. E. perfect, 275 V. D.C.
2—300KW G.E. MG Sets, like new.
3—300KW Westinghouse MG Sets, 275 V., rebuilt.
1—300KW West. 600 volt MG Set, rebuilt.
2—200KW, G.E. Rotary Converters, 600 V. D.C.
2—300KW Westinghouse, 600 volt, 6 phase. Rotary Converters.
4—300KW G.E. Rotary Converters, 600 V. D.C.
2—500KW Westinghouse, 600 volt, D.C., 6 phase, Rotary Converters.
2—500KW G.E. HCC-6's, Rotary Conv., 6 phase, 600 V. D.C.
3—GMC-671 Diesels w/75 & 110KW, 250 V. D.C.
1—Int. VD-14 Diesel with 50KW, 250 V. D.C. Gen.
1—GMC-471 Diesel with 60KW, 250 V. D.C. Gen.
1—100KW Natural or LP Gas Engine with Generator.

LOADING MACHINES

16—Joy Loaders, 14BU, 12BU, 8BU, 11BU, 20BU.
5—Joy 12BU9E Loaders, 220/440 V. A.C. Excellent.
3—Joy 12BU9E Loaders, latest type.
2—Joy 12BU with Piggyback Conveyors.
1—Goodman 865 Loaders, 26", on Crawlers.
1—Goodman 665 Loader, on Crawlers, rebuilt.
1—Goodman 660 Loader, on Crawlers, 250 V. DC.
1—Goodman 460, on track, rebuilt, all hydraulic.
2—Jeffrey 61 CLR's on rubber, 26".
3—Jeffrey L-500 Loaders.
2—Myers Whaley, No. 3 Automatic Loaders.
2—Clarkson Loaders, 26" above rail.

MISCELLANEOUS

1—Jeffrey 76—A Col Mol, 220/440 perfect.
1—Joy 5 JCM Continuous Miner, 220/440, perfect.
1—CMI Dreyer
150 Tons Copper—4/0 and 9 Section Trolley 1/0, 2/0, 4/0 Stranded, 500 MCM, 750 MCM, 1,000,000 MCM Insulated.
1—Each 4', 5', 6' & 8' Hi Pressure Joy & Jeffrey latest type Fans.
1—Complete Five Track Tipple with washers and Air Tables.
5—Complete Tipples, 3 to 5 Track. Wood and Steel.
Steel trestles for drop bottom cars.
All Steel Armco Buildings.
20—Jeffrey Molveyors on rubber tires.
1—¾ Yard Shovel and Back-Hoe.
2—¾ Yard Crawler Cranes, Gas.
Battery Supply Tractors, Rubber Tired.
1—Cantrell Air Compressor on rubber tires.
10—Air Compressors, 1 H.P. to 40 H.P.
1—Joy self-propelled rubber tired comp., 240 cu. ft.
1—Acme self-propelled rubber tired compressor, 130 cu. ft.
40—Mine Pumps, all types.
1—Differential 40 passenger Man-Trip car.
6—MSA Rock Dusters.
Joy Roof Drills—Schroeder Coal Drills.
2—Phillips Carriers, 44" and 48" ga.
1—Barber-Greene self-propelled Bucket Elevator.
Pipe, Plastic, Steel Transit, all sizes 1" to 6".
25,000 Roof Bolts, all types.
300—Mine Cars, drop bottom, 42" 44" 48" Ga.
300—Mine Cars, 18" high, end dump, 42", 44", 48" Ga.
1—10 ton Mine Car Scale with Recorder.
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15—Brown Fayro HKL and HG Car Spotters.
1—Brown Fayro Hydraulic Car Spotter.
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Shaft Hoists to 700 HP complete.
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ALLIS-CHALMERS HD-21-A, 1960 unit.
INTERNATIONAL TD-24, 1956 unit.
CATERPILLAR D-8, 1951 unit.
CATERPILLAR D-6, 1949 unit.

SHOVELS

MANITOWOC 3500, 2 Yd. Stripping Shovel, 1952 unit.
MANITOWOC 3900-B, 3½ Yd. Dragline, 1958 unit.
PAGE 625, 10½ Yd. Dragline, 1950 unit.
PAGE 621-S, 6½ Yd. Dragline, 1948 unit.
LORAIN 820, 2 Yd. Stripping Shovel, 1953 unit.

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621-S Page Diesel Drag, 125', 7 yd.
183-M Marion Diesel Drag, 130', 8 yd.
200-W B.E. Diesel Drag, 125', 6 yd.
2400 Lima Diesel & Elec. Drags, 130', 6 yd.
7200 Marion Diesel Drag, 135', 5 yd.
4500 Manitowoc Drag. 120', 5 yd. & 140', 4 yd.
120-B B.E. Elec. Drag, 115', 5 yd.
111-M Marion Drag, 100', 4 yd.
1055 P&H Diesel Drag, 80', 4 yd.
1601 Lima 4 yd. Shovel/Drag
1201 Lima Drag, 85', 3 yd.
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5560 Marion 26 yd. Elec. Shovel
5323 Marion 18 yd. Elec. Shovel
190-B B.E. 8 yd. Elec. Shovel
151-M Marion 7 yd. Elec. Shovel
1600 P&H 6 yd. Elec. Shovels
170-B B. E. 6 yd. Elec. Shovels.
4161 Marion 6 yd. Elec. Shovel
2400 Lima 6 yd. Std. & H.L. Shovels
120-B B.E. & 4121 Marion 4 yd. Elec. Shovels
4500 Manitowoc 5 yd. H.L. Shovel
1201 Lima 3½ yd. Standard Shovel
111-M Marion Standard & H.L. Shovels
3500 Manitowoc Standard & H.L. Shovels
54-B B.E. Standard & H.L. Shovels
No. 6 N. W. & 80-D N. W. Standard Shovels
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● Newly published by Caterpillar Tractor Co. is an 8-page booklet entitled "It's A Matter Of Record . . . It Pays To Replace Older Equipment." The company documents changes from previous model tractors in the D7 and D8 class.

This brochure demonstrates how improvements in today's 235 HP D8H and the 140 HP D7D are resulting in greater profit potentials for owners. One contractor is quoted "When we replaced our 15A (1955) D8s with the new machines, it cut our pushloading time by a third. It also cut daily maintenance time by more than 50%."

This is booklet D110 and may be obtained from Caterpillar dealers or from the Advertising Division, Caterpillar Tractor Co., Peoria, Illinois.

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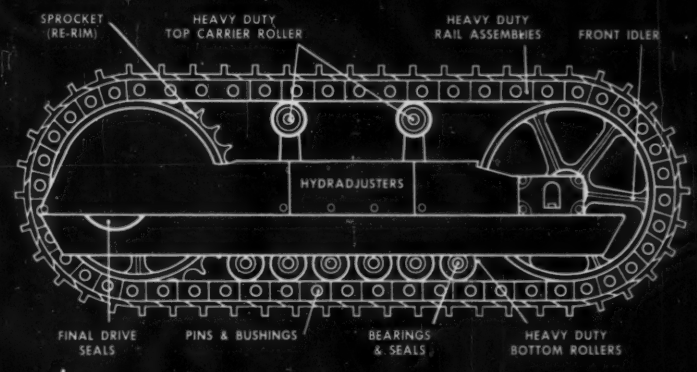

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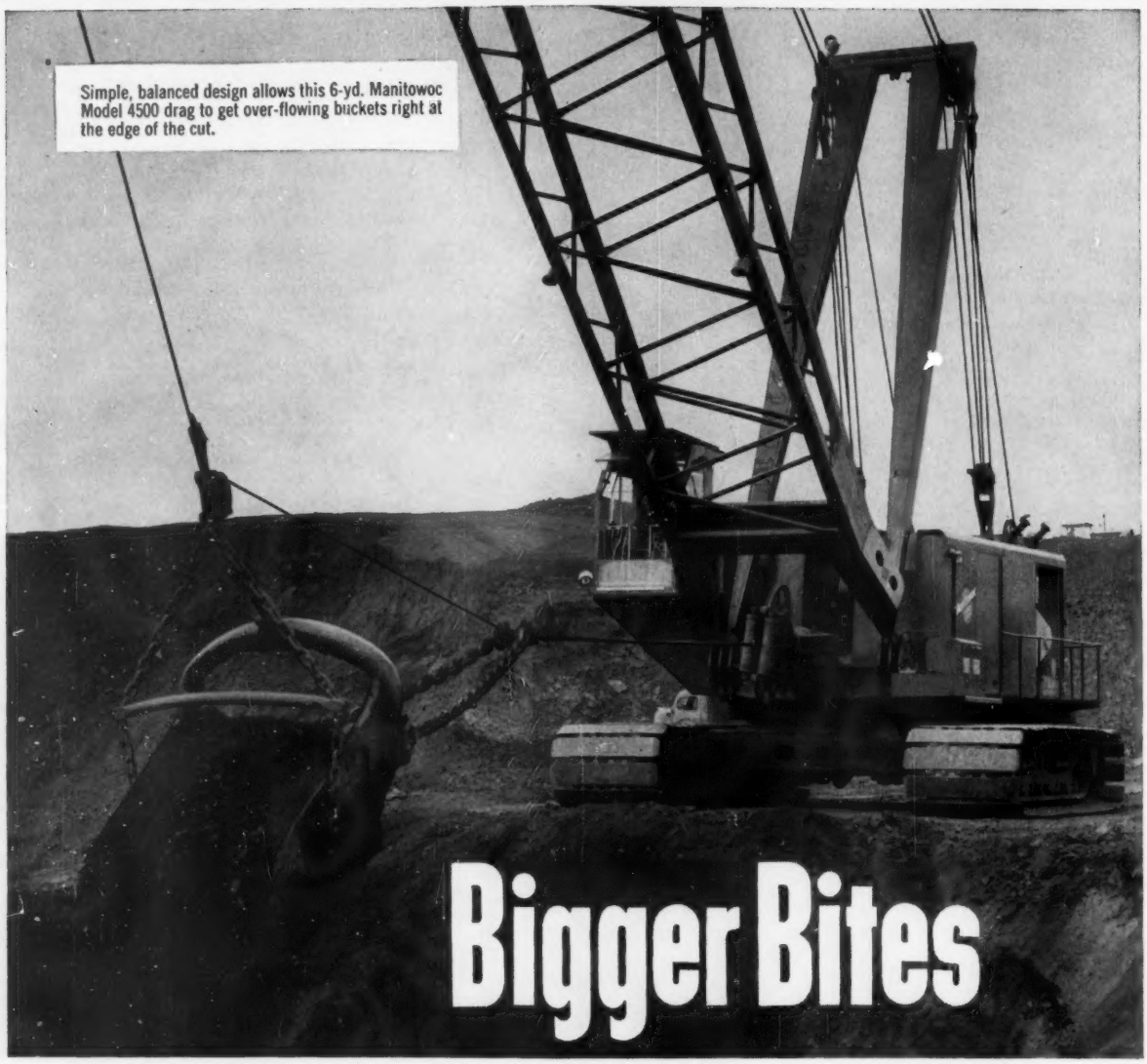
Simple, balanced design allows this 6-yd. Manitowoc Model 4500 drag to get over-flowing buckets right at the edge of the cut.
Bigger Bites

MANITOWOC DESIGN PUTS ALL THE POWER TO WORK

There's no wasted horsepower with a Manitowoc Model 4500. Intelligent design forethought has reduced power-robbing extra parts throughout this big capacity mining machine. In fact, there are only 15 gears and 8 sprockets! And *only working gears turn* . . . Manitowoc's exclusive slide pinion arrangement disconnects all others until their function is needed. Even many *small* excavators don't have simplicity of design like this!

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TRUE MOBILITY TO MAKE MINING PROFITABLE ANYWHERE

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. . . all air used to drill and clean hole.
. . . no complicated transmission, no rotary table.
. . . no kelly bar – in and out of the hole faster.
. . . instant safety torque release protects all drive components.

REICHdrill has built a reputation for keeping maintenance costs low; footage records high.

And these additional REICHdrill features help set drilling records: masts incline for angle drillings; CP heavy-duty compressors assure plenty of air to meet all demands; fast-acting, ram-type hydraulic leveling jacks permit use of most rig weight for down pressure; CP "Air-Blast" Bits for extra footage in toughest formations.

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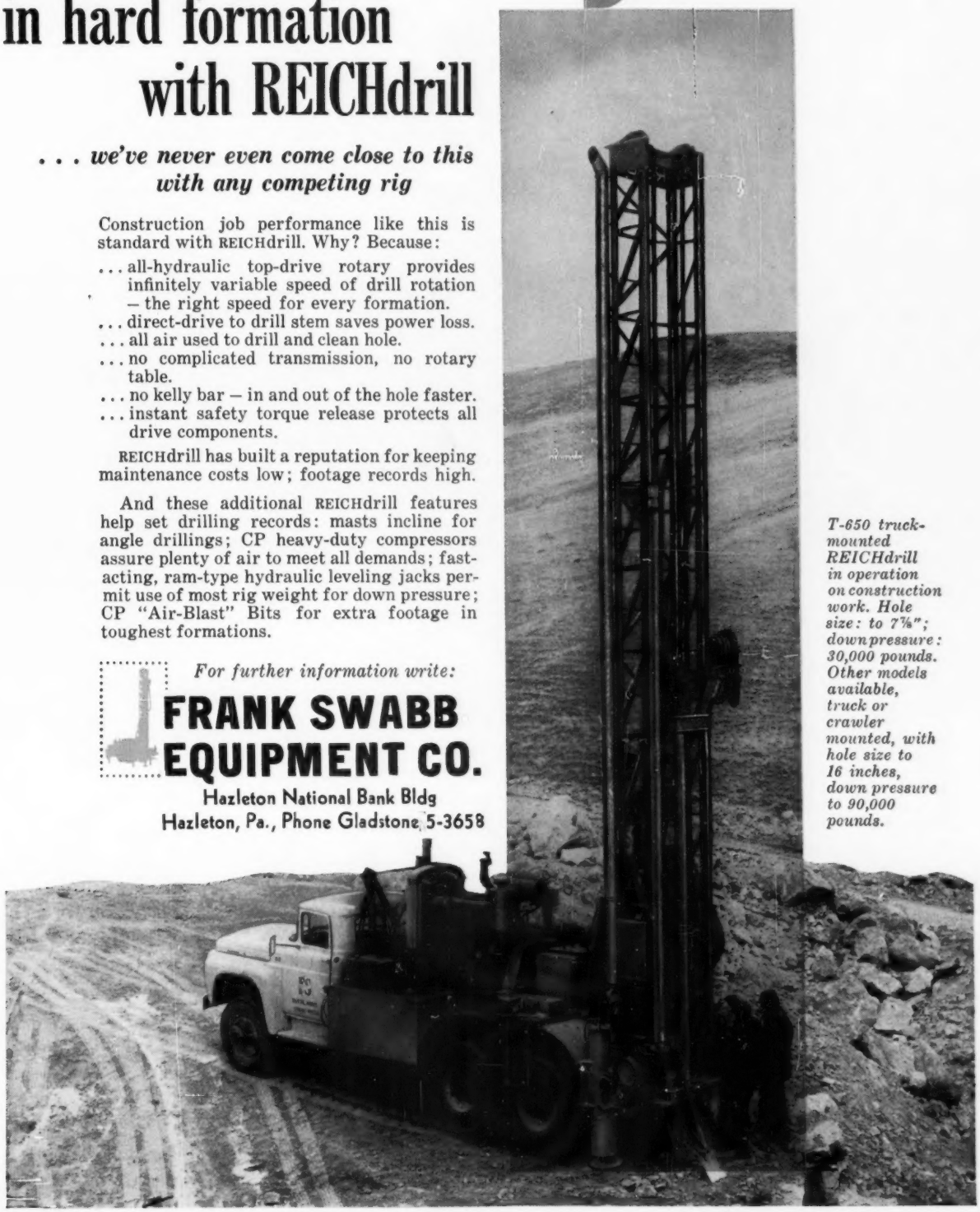

T-650 truck-mounted REICHdrill in operation on construction work. Hole size: to 7⅞"; down pressure: 30,000 pounds. Other models available, truck or crawler mounted, with hole size to 16 inches, down pressure to 90,000 pounds.

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New ALLIS-CHALMERS TL 16

The new Allis-Chalmers TL-16 will give you more production than any other loader of its size and class.

109 hp (gasoline) 7,000 lb. carry capacity
105 hp (diesel) Weight: 18,000 lbs.
2- to 4-cu-yd. buckets

Ask your Highway representative today about the unmatched operating features of the TL-16 and other Allis-Chalmers tractor loaders. Their extra capacity speeds coal handling . . . reduces costs on every shift.

A-5346A

There are 6 tractor loader models—77 to 184 hp . . . 3,600 to 10,500-lb. carry capacities. Photo shows TL-30 . . . 3 to 6-cu-yd buckets.

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